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ON THE HASCHISCH OR CANNABIS INDICA.

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THE various periodicals of this country have abounded, during the last few years, with accounts of the Haschisch; every experimenter giving the history of the effects it has had upon himself. In most cases this has been mingled with much fanciful and irrelevant matter. These notices have been confined almost exclusively to the various popular literary journals, but it has not received the attention it merits in those exclusively devoted to medicine. Under these circumstances, the following *résumé* of what has been written on the subject, seen through the medium of personal experience, may not be destitute of interest.

Among the nations professing Mahometanism, there are not a few substances used as substitutes for the alcoholic liquors interdicted by the author of that religion. They are everywhere the most inveterate users of tobacco, opium, coffee, and a variety of other narcotics less generally known. Among these latter, no one has recently attracted so much attention as the *Haschisch*, Cannabis Indica, or Indian Hemp. It is only within a few years, comparatively, that a knowledge of it has come to us, but it has been in general use for many centuries at the East, and reference is even thought to have been made to it by the ancient classic authors. The novelty of its effects and its apparent harmlessness have induced travellers in Egypt and Asia to experiment upon themselves, and a knowledge of it has thus found its way to the nations of the West. The defective pharmaceutic processes employed by the inhabitants of its native countries, render its preparations of very different strength, and admixtures of various foreign substances make its effects uncertain. A specimen obtained from Damascus contained about twenty-five per cent. of opium, a considerable quantity of camphor and spices, and nearly half was a mixture of rancid butter and extract of hemp. The substance widely known in this country

under the Arabic name of *Haschisch*, is obtained by boiling the leaves and flowers of the plant with butter, and, when pure and carefully prepared, is a very active preparation. The extracts prepared in this country from the Indian plant, contain all the properties of the *Haschisch*, and are every way preferable to it. The common hemp, though believed by botanists to be a variety of the same species as its Indian congener, is entirely destitute of the property which distinguishes the latter. This difference alone, if found to be permanent, would be sufficient to cause them to be regarded as distinct species.

The action of the drug is not confined to any single part of the system. It is an efficient but slow cathartic, an active diuretic and sudorific, and a most irresistible hypnotic in the latter stages of its action. But it is better known for its effect upon the nervous system; it is for this object that it is extensively employed in the East, and it is in this connection that it possesses its greatest interest. Abundant personal experience of it leads me to think that its peculiar effects upon the nervous system are only a secondary result of its action upon the mucous membrane throughout the whole track of the alimentary canal. The slowness of its action, not commencing in less than two hours after the dose is taken; the sensation of dryness, and afterward the abundant secretion in the throat and mouth; the heat throughout the abdomen, and the soreness which persists for several days; and, finally, the absence of any symptoms of nervous debility, when the immediate effects are gone; all point to this as its *modus operandi*. It would seem as though it were absorbed, and that in this process of being thrown off, it occasioned those phantasies which have caused it to be used as an intoxicating agent. In the dose usually recommended, of from one to three grains, it is absolutely inert: five grains is the smallest quantity from which any perceptible effects are to be expected, and generally more will be required. Few persons, perhaps, who have read the brilliant "Confessions of an English Opium Eater," have been without a fancy to experience the wonderful effects there described: all who have yielded to the desire, have been disappointed. If any one supposes the intoxication of *Haschisch* to be of the same nature, a few grains of the drug will most efficiently purge him of the idea. On the first trial, one is generally frightened at the intensity and violence of its action, and few will be disposed to carry the dose beyond ten grains. Indeed, most will be amply satisfied with having once experienced it. The following were the results of a moderately large dose of Tilden & Co.'s extract.

It was taken with coffee, which increases the effects of the hemp, and at the same time diminishes its duration, perhaps merely by promoting a more rapid absorption. For two hours no results at all were experienced. At this time a dryness seemed to

commence at a particular spot in the throat, and a feeling of warmth throughout the abdomen. These were not the results of disordered sensation, for a clammy mucus soon began to be secreted, though the huskiness of the throat still remained. Up to this time, there was not the slightest excitement or confusion of thought. Suddenly, however, an idea having no connection with the train of thought passing in the mind at the time, appeared, as though suggested by another person, and then was gone again as suddenly as it came, leaving upon the mind much the same feeling as when one escapes from a dream or a deep reverie. The same thing was repeated two or three times, at intervals rapidly diminishing in length. Even now I can hardly believe but it was the result of strained attention to my physical sensations, for the gentle warmth of the abdomen was rapidly becoming a burning heat—still, however, not by any means unpleasant—and the dryness of the throat had extended to the tongue.

I had taken the drug with great scepticism as to its reputed action, or at any rate with the opinion that it was grossly exaggerated, and I accordingly made up my mind not to be "caught napping" in this way again, and to keep a careful watch over my thoughts. But while enforcing this resolution, as I supposed, I found myself, to my own astonishment, waking from a reverie longer and more profound than any previous. From scepticism, to the fullest belief of all I had read on the subject, was but a step. Its effects so far surpassed anything which words can convey, that I began to think I was on the verge of narcotic poisoning; yet, strange to say, there was not the slightest feeling of inquietude on that account. I resolved to walk into the street. While rising from the chair, another lucid interval showed that another dream had come and gone. While passing through the door, I was aware of having wandered again, but how or when I had permitted myself to fall into the reverie I was perfectly unconscious, and knew only that it seemed to have lasted an interminable length of time.

These singular attacks of mental disturbance recurred oftener, and lasted longer, till the lucid interval between was reduced to a mere instant's conscious duration of thought. This condition came on so rapidly, that in less than fifteen minutes from the time of my being aware of the first mental disturbance, the power of controlling the thoughts was almost completely lost. All ideas of time and space were especially bewildered, and I realized completely for the first time the ideas of some metaphysicians, that time, properly speaking, has no existence except in connection with a succession of mental operations or sensations. The most trivial circumstance, the slightest noise, gave rise to trains of thought, which went bounding from subject to subject, completely emancipated from the rules which ordinarily govern the mental ope-

rations, till suddenly some other circumstance would give an entirely new direction to them, and the last series of imaginations would seem to have lasted from eternity, even while the eye was fixed upon the clock, the hand of which had not perceptibly moved.

Now, a phenomenon still more singular began to exhibit itself. I felt that, in spite of all exertions, I was beginning to receive the suggestions of disordered fancy for real objective facts. Intellectually, I knew that the spinal column could not be a barometer, in which mercury had usurped the place of the spinal cord. Yet in another sense, over which the operations of the intellect were completely powerless, I felt that it was a barometer. An unpleasant sensation in the lumbar region suggested the idea of a heavy column of mercury pressing upon it, and at the time, and under the circumstances, the transition to the idea of the barometer was easy and natural. There was no balancing of arguments in the arrival at this conclusion; there was no half-way period of doubt and uncertainty, to emerge into full credence. At the instant the idea occurred at all, it commanded the assent, with the same fulness as when in perfect mental health does the idea of our own existence. The thought certainly occurred that it was a delusion, but it made no more impression than the suggestion would, that the sense of sight was a figment of the brain, and objects seen had no existence except in the imagination. This belief was not a transient one; it was the first hallucination to appear, and continued with varying degrees of intensity, as the thoughts were more or less occupied with other subjects, till all others had disappeared. The belief in the reality of the delusion was never for an instant absent; it pervaded the whole being, and was often the point on which the thoughts turned seemingly for a long time. The painful attempt to regulate these disturbed states of consciousness, was soon given up, and, half voluntarily, half by a species of moral compulsion, the whole psychical nature surrendered itself, without further struggle, to the fullest and most complete belief in the actual existence of a thousand hallucinations. During this time the thoughts were becoming more and more disordered; ideas, between which, apparently, there was not the slightest connection, thrust themselves in, till finally their rapid recurrence, and the loss of that sense of governing the mind which we ordinarily possess, induced the belief that I was the victim of diabolical agency—that some terrible demon had taken possession of my whole intellectual being, and identified himself with every thought, in the same way that a man might direct the physical movements of a child. The feeling of utter powerlessness to check the wild current of thought was complete, and there was a sensation as though, if there had been the ability, the will could not be exercised.

The firmest intentions were forgotten in an instant. There

seemed to be no difference between the idea and the expression of it in words. A moment was long enough to forget whether it had been expressed or not. The sound of persons whispering in the room, brought with it the belief that they were laying some plot. It was not a vague suspicion that they were intending some injury, such as whispers and glances might excite in any one; but everything they had said—the particulars of the whole plot—were present, with the same vividness and overpowering conviction as they always are in true hallucinations.

The *fantasia* had now arrived at its height. It was an hour and a half since the first sensations of excitement and wandering commenced. About the same time passed before it had completely subsided. The mental phenomena in this stage were as remarkable as while the effects were coming on. One after another the delusions disappeared as rapidly as they came; not by any exercise of the gradually returning regularity of thought, but suddenly—with a bound—so that it was surprising to have believed, a moment before, what now appeared so absurd.

The whole time during which there is any perceptible difference from the normal state, is from three to five hours, according to the dose taken. The hemp resembles in its action some other medicines which are erroneously called cumulative. That is, a dose may be taken without producing any perceptible action; and on another occasion, a dose only a grain larger will act violently. Indeed, the effects of this agent seem to be of such a nature, that there is no resting place between its full action and none at all. A delusion, of the truth of which we are only half convinced, would be no delusion at all. Unlike opium, alcohol, and other narcotics of the order Solanaceæ, it leaves behind it no mental confusion, headache, or other signs of a direct and powerful action upon the nervous system. The secretions of the alimentary canal, however, remain in an unnatural state for several days, and there is a slight oppression felt in the abdomen, if the dose has been at all large. During all the time of its action, there is a tendency to laugh, in spite of the delusions, which are almost uniformly of an unpleasant character. The feeling of buoyancy of spirits is somewhat the same as is caused by a slight dose of alcoholic stimulant.

Amid all the strange vagaries of the *Haschisch*, the mind preserves the power of taking cognizance of its condition, and to a certain extent of analyzing its operations. The memory of everything said and done is nearly perfect; but of the multitude of thoughts, only those making a more than commonly distinct impression are preserved.

Can this singular substance be put to any useful purpose, to illustrate any of the varied mental phenomena of health and disease? Is it worthy a place in the medical *armamentum*, from its action alone upon the mind?

The great advances made in the philosophy of medicine during the last half century, have been due almost entirely to the devotion with which pathology has been pursued. Instead of the ill-arranged and ill-understood assemblage of symptoms observed with scrupulous care, which went to make up the idea of a disease, we now direct our aim to strip it of everything fortuitous and to fix in the mind the type of the malady—those essential features which are uniformly the same under every variety of circumstances, and about which the more obvious symptoms cluster, like the drapery about a statue. In diseases of the mind, this has not been done: their seat and nature are too deep to be reached by the knife of the morbid anatomist. Esquirol, after a whole life devoted to the study of this subject, and after the most ample opportunities that have ever fallen to the lot of any individual, says, that "pathological anatomy is yet silent as to the seat of madness; it has not yet demonstrated what is the precise alteration in the encephalon which gives rise to this disease." Nor has greater success obtained in the attempt to explain the relations and analogies of the various forms of insanity. The cause of the latter failure is sufficiently obvious. Theory has taken the place of fact. No competent individual who has experienced insanity in his own person, has written upon the disease. The insane themselves can rarely give a consistent account of their disease, even if they were qualified, by previous study and observation, to take the best advantage of their own mental state. Even our own observation of the disease is rarely complete: the minor degrees do not come under the care of the physician, and it is only when the more severe cases are evident to all, that friends will acknowledge its existence and submit the unfortunate patient to examination. How imperfect would be our ideas of grief, anger, or pain, if we could only observe their outward manifestations, or listen to a description of them by one who had suffered them! And yet this is all, and more than all that we can know of the intimate nature of insanity, of its connections and analogies, unless we have suffered it in our own persons. If we had never felt any of the passions, our diagnosis of them might perhaps be as perfect, and the empirical treatment as successful, as now; but a vagueness would necessarily pervade our mind as to their nature, and we should be liable to continual error in reasoning upon them. Southwood Smith well observes, that the symptom of fever termed *febrile restlessness* cannot be understood by any one who has not experienced it in person.

The most superficial observation of a case of mania, will not fail to show many and strong points of resemblance to that of a person under the influence of a powerful dose of Cannabis Indica. In both there is the same excitement and abruptness of manner, the same rapidity and incoherence of thought, the same false convictions and lesions of the affective faculties. The following de-

scription, by Prichard, of an ordinary case of chronic mania, such as composes the greater number in the wards of every hospital, might apply, without the change of a word, to the condition of a person under the influence of the *Haschisch*. "It is, however, a state of great intellectual weakness, in which none of the operations of the mind are performed with energy or effect. The memory, the judgment, the powers of attention and combination, are so much impaired, that the individual is wholly inadequate to the duties of society, and incapable of any continued conversation; his actions and conduct are without steadiness and consistency, his thoughts are deficient in concentration and coherence."

There is no really important point in which these manifestations differ from the condition produced by the *Haschisch*. There is no error of judgment, no delusion or lesion of the will or moral faculties, which is seen in the former state, but what might take its rise in the latter. In this question, the difference of cause of the mental disturbance might at first sight appear an insuperable objection to reasoning from one condition to the other. But is insanity always produced by the same cause? On the contrary, there is no disease to which the human frame is subject, that acknowledges such a variety. There is hardly a physical or functional lesion of any tissue or organ, but may produce it by its reaction on the nervous system, and it is difficult to say whether the best or worst proclivities of our nature are oftenest regarded as the productive agents of the same mental disease. If opium and tobacco and alcohol may produce, by long use, without any apparent disease, a mental state which deserves the name of insanity, why may not the *fantasia* of hemp receive the same name? What reason, then, is there why we may not rely upon its revelations as so many views of the hidden workings of the spirit, in that gravest of all diseases? If this be allowed, the *Haschisch* may in a degree serve as a key to unlock some at least of the mysteries of mental pathology. Why may we not thus possess a means of studying the disease in question, better than we have of most others? We can apply to it the principles of experimental philosophy, and test it by the best of means upon the best of subjects. The idea of this application of the medicine originated with Dr. Moreau (de Tours), of Paris, a physician of large experience in his specialty, and whose work* on the subject possesses the highest interest, as presenting many views of insanity and kindred subjects, different from those commonly received.

In the study of insanity by this means, if there is any one fact impressed upon the mind more strongly than another, it is that of the essential unity of the whole psychical nature. It is impossible not to recognize the truth that the ordinary language of meta-

* Du Haschisch, et de l'aliénation mentale.

physics is applicable to the explanation of morbid mental phenomena. The popular division into the intellect, the will, the instincts and the moral faculties, though having a show of precision, and absolutely necessary in common language, conveys too much. Such divisions are too distinct and disconnected to be true to nature. The minute organilogical divisions and hasty generalizations of the phrenologists are only the results of the same principle carried to a greater extent.

[To be concluded next week.]

DR. EDWARD BROWN-SEQUARD'S EXPERIMENTAL AND CLINICAL RESEARCHES APPLIED TO PHYSIOLOGY AND PATHOLOGY.

[Continued from page 158.]

§ XIII. My experiments upon animals, compared with cases of epilepsy observed in man, throw a great deal of light on what we might call the physiology of epilepsy, that is, upon what concerns the etiology, the seat, and what is vaguely called the nature of this disease. It is easy to show that one or the other of the two series of facts we have to compare, if not both, are in opposition with the various doctrines concerning the production and the seat of epilepsy. A short critical examination of these doctrines will prove the correctness of this assertion.

The time has passed away when men of talent were tempted to place the seat of epilepsy in the pituitary body (Joseph Wenzel), in the pineal gland (Greding), or in the spinal cord (Esquirol, Reid). The injuries or organic alterations of these parts, as well as of other parts of the nervous system, may be either the cause or an effect of epilepsy, but none of these parts can be considered as the *essential seat* of this affection. The numerous cases of co-existence of epilepsy and of a disease of the pituitary body, related by Joseph Wenzel (*Beobachtungen ueber den Hirnanhang fallsüchtiger Personen.* Edited by Carl Wenzel, Mainz, 1810), have lost their apparent importance since it has been shown by Romberg (*loco cit.*, p. 685) and others (Rokitansky, Engel and Sieveking, in Handfield Jones's and Sieveking's *Manual of Pathological Anatomy*, 1854, p. 267, *Amer. Ed.*) that the pituitary body may be altered although epilepsy does not exist, and that this neurosis may exist without any apparent alteration in this small organ. There is no part of the nervous centres about which the same argument could not be used.

Many writers have asserted that epilepsy must depend upon a disease of the brain (organic or not), on account of the existence of the cerebral symptoms. It is useless to speak of the authors who have been or who still are unacquainted with the phenomena of reflex actions; I will merely refer for their views to the works of Portal (*loco cit.*, p. 143–155) and Delasiauve (*loco cit.*, p. 27–

35). But many physicians of talent, knowing very well what relates to the reflex actions, have considered the brain as the essential seat of epilepsy. Thus, this affection is placed among the so-called cerebral convulsions by very able pathologists, such as Romberg (*loco cit.*), Spiess (*Krankhafte Stör. des Nervensystems*, in Wagner's *Handwörterbuch der Physiol.*, vol. iii., 2d part, 1846, p. 188), Russell Reynolds (*The Diagnosis of Diseases of the Brain, Spinal Cord, &c.*, 1855, pp. 143 and 174), and others. According to Dr. John Simon, "the intellectual changes which precede, accompany or follow the progress of the disease, its concurrence with insanity, and its tendency to dementia, further mark the convoluted surface of the hemispheres as the primary seat of the morbid process" (*General Pathology, &c.*, 1852, p. 152, *Amer. Ed.*).

The modern physiologists agree in admitting that the brain proper (the cerebral lobes) cannot give rise to convulsions when it is irritated, in animals. Surgeons have sometimes had an opportunity of ascertaining that, in man also, the brain may be cut without producing convulsions. But these facts merely prove that usually the brain proper cannot be excited by our means of excitation. They do not prove that it cannot be irritated by other kinds of irritation. The cerebral lobes, as being the seat of the will, are certainly connected with muscles and can produce contractions in them, as our voluntary movements constantly prove. We think convulsions may result from kinds of irritation (as that of a poison in the blood, for instance) different from those which we usually employ in our experiments. On another side it may be that alterations in the nutrition of the brain, and other causes, produce a change in the vital properties of this organ, or rather give it something that normally it does not possess, viz., the property of causing convulsions when it is irritated. That such a change in the vital powers of the cerebral lobes is possible, we are led to admit, as we know that other parts of the nervous system may acquire vital properties that they have not in their normal state. For instance, some parts of the sympathetic nerve seem to be deprived of sensibility, but inflammation renders them very sensitive; the nerves of tendons seem to be without sensibility, but inflammation renders them evidently sensitive, as has been definitely proved by the well-devised experiments of Prof. Flourens (*Comptes Rendus des Séances de l'Académie des Sciences*, 1856, vol. xliii., p. 639). I might give also as a striking instance of a change in the vital properties of a part of the nervous system, what occurs to the cutaneous ramifications of certain branches of nerves in the face and neck, after an injury to the spinal cord in animals.

I must now say that, although I admit the possibility of the production of convulsions by an irritation of the cerebral lobes, I do

not think it is proved that these parts of the nervous system have actually caused convulsions. The facts mentioned by Romberg (*loco cit.*, p. 625–27) do not furnish such a proof. They may be explained by admitting that the convulsions depended upon either an excitation of the sensitive nerves of the meninges, or upon pressure on the parts of the encephalon which are known to be excitable, or upon the disturbance of circulation and nutrition in the excitable parts of the encephalon. The case of a child (*Pathol. and Pract. Researches on Diseases of the Brain*, by Abercrombie, 4th Edit., 1845, p. 57), upon whose anterior fontanelle pressure determined convulsions, and the experiments of Portal (*loco cit.*, p. 149), which gave similar results, cannot prove anything, because pressure upon any part of the brain through a small opening in the cranium, acts upon the whole of the encephalon.

Until it is proved that the cerebral lobes have directly caused convulsions, we are not entitled to say that the seat of epilepsy is in them. If it is argued that the brain proper must be the seat of this affection because an idea or a remembrance, or a smell or the sight of certain things, may induce a fit, we answer that these causes of convulsions act in producing an emotion, and that emotions have their seat in the pons varolii and the medulla oblongata, and not in the brain. If it is said that the loss of consciousness implies that the cerebral lobes have something to do with epilepsy, we certainly do not deny it; but what is the relation between these lobes and epileptic fits? How can convulsions, *i. e.*, actions the existence of which imply that a great amount of nervous power is employed—how can they be produced by an organ which has lost its principal function? How can this organ be so active in the production of convulsions just at the time it loses its activity as the organ of volition and perception? How can we admit that an organ assumes actions which it is not known to possess, at the same time that it loses its well-known actions?

Those physicians who maintain that the brain is the primary or essential seat of epilepsy, have too much neglected these difficulties and contradictions. Their only argument consists in saying that it *must* be so because the brain is affected; but we might employ a similar argument to say that many other parts of the nervous centres are the seats of epilepsy because they are evidently affected, and as much as the brain. It is interesting to remark that it is just the same argument that Dr. Marshall Hall employs to show that the seat of this affection is in what he calls the *true* spinal cord. Such arguments in the end amount to simply an assertion like the following: it is so, not because it is proved to be so, or because the facts agree in allowing us to admit that it is so, but because we cannot explain it otherwise. An argument of this kind is never a decisive one; but it has no value, and ought not to be employed, when the facts are not explained by the hypo-

thesis considered as the only possible explanation, and still more (as is the case with the supposition that the seat of epilepsy is in the brain proper) when there are facts in opposition to the proposed explanation.

We will try to show hereafter that the loss of consciousness in epilepsy may be explained otherwise than by admitting that the brain is the seat of this affection, and that the loss of consciousness, whether it exists alone or with convulsions, may be due to an action beginning elsewhere than in the brain.

As regards the state of the mind and of the senses after an attack of epilepsy, it is not and cannot be a proof that the seat of this disease is in the brain, as those disturbed states may result from various circumstances existing during a fit.

We must now say a few words of a theory which pretends to solve the difficulty above exposed, concerning the coincidence of the loss of action of the brain and of an increased muscular action. The estimable author of a singular but interesting work (*Epilepsy, and other affections of the nervous system which are marked by tremor, convulsion or spasm, &c.*, 1854), Dr. C. B. Radcliffe, in this book and in his lectures on Epilepsy (*Medical Times and Gazette*, March and April, 1856), grounds an explanation of this difficulty upon the supposed fact that muscular contraction does not depend upon a stimulus by the nervous system, but upon the cessation of all stimulus. Dr. Radcliffe, after Dugès and others, thinks that muscular contraction is a purely physical phenomenon, dependent on ordinary molecular attraction when the muscle is *not* stimulated. If the muscles are at rest, it is because an excitation comes upon them, preventing the molecular attraction from producing contraction. If a voluntary movement takes place, it is because the will has suppressed the nervous action which prevented contraction. In a fit of epilepsy, convulsions take place, together with the loss of consciousness, because the brain and other parts of the nervous centres lose their powers at the same time, and stimuli being withdrawn from the muscles, they are left to the action of molecular attraction, and therefore convulsions are produced. It is useless to discuss a theory like this, which is in opposition to almost all the known and the most positive facts of physiology and pathology. I will merely say that if the theory were true, we should always see convulsions in paralyzed muscles, and also after death at the time when nerves lose their power upon muscles.

According to another theory, which certainly deserves much more attention than the preceding, epilepsy depends upon changes taking place in the circulation of blood in the brain proper, and in the other parts of the encephalon. The germ of this theory may be found in the works of many writers, and particularly in the remarkable book of Prichard (*A Treatise on Diseases of the*

Nervous System, part 1st, 1822), but Henle has done so much for it that he may be considered as its originator. In his admirable work (*Handbuch der Rationelle Pathologie*, vol. ii., 1st part, 1855, 2d ed., p. 181–3 and p. 403; and 2d part, 1854, p. 46) he tries to show that there are two kinds of epilepsy, one attended with plethora, the other with anæmia. In both there is as a cause of convulsions, a pressure by accumulated blood in the vessels of the base of the encephalon. We may understand easily the congestion of the brain in plethora, but it is not so as regards anæmia. Henle explains it in this last case, in admitting that when anæmia goes on increasing, the bloodvessels of the upper parts of the encephalon becoming empty, the others necessarily become more filled, on account of the impossibility of the cranio-spinal cavity containing less fluid (an impossibility well established by Kellie, Abercrombie, J. Reid and others). As regards the loss of consciousness, it is attributed to an excess of blood pressing upon the brain proper, in plethoric epilepsy, and to the diminution of blood in this organ, in anæmic epilepsy.

Although we think that many thanks are due to Henle for the efforts he has made to show the relations between the phenomena of epilepsy and the state of the blood-vessels of the various parts of the encephalon, we cannot adopt his theory.

In the first place, if a congestion in the two distinct parts of the encephalon (the brain proper and the basis of the encephalon) was sufficient to produce epilepsy, this disease would be much more frequent than it is, and we should not see so often hyperæmia of the encephalon without convulsive fits, and nevertheless powerful enough to cause paralysis, delirium or coma. The great work of Prof. Andral (*Clinique Médicale*, 4th ed., vol. v., 1840, p. 217–292) and almost all the treatises on intermittent fever, and particularly those of Bailly and Maillot, afford decisive proofs of the frequency of cases of encephalic congestion without epilepsy. Henle himself has been obliged to say that *individual disposition* is necessary for the production of this convulsive affection.

In the second place, we object to the theory of the learned German physician, because he gives no proof that the mere mechanical action (pressure) due to accumulated blood in the vessels of the basis of the encephalon, is sufficient to produce convulsions.

In the third place, Henle does not give any clear reason why, in the anæmic epilepsy, the bloodvessels of the brain proper contract, while those of the basis do not; and besides, except concerning lead disease, he does not say what excites contraction in them.

[To be continued.]

MINERAL WATERS OF OHIO.

[We re-print, from the *Ohio Medical and Surgical Journal*, the following account of a mineral spring at Bryan, Williams County, in that State. It forms part of the report of a Committee on the Mineral Waters of Ohio, to the Medical Society of that State. Various other springs are described in the report, which our space will not allow us further to notice.—Eds.]

An analysis of the water of the extraordinary Artesian wells at Bryan, the county seat of Williams County, was made with great care and accuracy by T. G. Wormley, M.D., Professor of Chemistry in the Starling Medical College, &c., also a member of this committee.

The town of Bryan, or "Fountain City," as it is familiarly called, on account of the peculiarly interesting character and abundance of the Artesian fountains there, contains from twelve to fifteen hundred inhabitants; and nearly every family in town is supplied with a perpetually-flowing fountain, all of which possess the same uniform character, and, doubtless, have a common source.

The country about Bryan is of a deep, rich, alluvial soil; a gently undulating surface; is regarded as more than usually healthy, being more exempt from malarial disease than a like character of soil in other regions of the same latitude.

These wells are obtained with but little labor and at a trifling expense. Two men, in from two to four days, with the most primitive kind of instrument for boring, can usually reach the subterranean stream, which, doubtless, has its source in an elevated and probably distant region, from which a jet of water is thrown up with great force through the bore, probably under hydrostatic pressure, and overflows at the surface; and, if enclosed in a tube, as a leaden pipe or pump-stock, is thrown to the height of six, ten, and sometimes fifteen feet above the surface of the earth; some of them at the rate of sixty barrels or more an hour!

The result of Prof. Wormley's analysis is as follows, viz.:

"Temperature of the water, 45°; that of the atmosphere being 72°.

"The amount of solid ingredients in *one gallon* of water is as follows:

Potash	1.654 grains.
Iron	.864 "
Lime	1.522 "
Magnesia	3.250 "
Alumina	trace.
Silica	trace.
Sulphuric acid	1.408 "
Hydrochloric acid	1.064 "
Carbonic acid	4.600 "
Free carbonic acid	4.600 "
Total amount of fixed matter in *one gallon* of water	14.362

"The 4.600 grains of free carbonic acid in one gallon would measure 9.78 cubic inches.

"Combining the above ingredients, we have, of—

Sulphate of potash	3.062	grains.
Chloride of iron	1.928	"
Carbonate of lime	2.718	"
Carbonate of magnesia	6.654	"
Alumina	trace.	
Silica	trace.	
Fixed salts, in *one gallon*	1.4362	"
Free carbonic acid	4.600	"

"The amount of *alumina* was so small that a separate estimate of it could not be made; so, also, of the *silica*. The *alumina* is, however, included with the iron.

"The principal characteristic of the water is the unusually large amount of magnesia which it contains, and the amount of iron, which is, also, large. The water might be termed '*magnesian chalybeate.*'"

One of the most striking characteristics of the water of these fountains is its remarkably low temperature at all seasons, ranging only from 10° to 13° above freezing in the hottest weather.

Another interesting circumstance is the remarkable fact that great numbers of a very small variety of fish come up from some of these fountains, specimens of which James W. Taylor, Esq., late State Librarian, procured and kept for a long time in the State Library, for the inspection of the curious.

In a scientific view, the analysis of the water of these extraordinary wells is important. Entirely unlike the surface water of that entire region, it unquestionably has its source in a geological formation unknown in that vicinity.

The process adopted by nature by which the large quantities of chloride of iron, the magnesia and other ingredients are taken up and held in solution, in this and similar cases, may not be easily explained. The water doubtless has its origin from some remote source, if it be the result of a solution from strata through which it percolates, unless the geological formation of that vicinity is entirely unlike what appearances upon the surface would indicate; and, if we could suppose it to be caused by chemical action going on in the earth, by the aid of water and internal heat, or the direct agency of volcanic heat, the low temperature and the living fish that are thrown out, sufficiently testify that the change must be effected at a remote point.

It is clear, pure, delicious, refreshing, as a beverage to quench thirst, and is used exclusively by all the inhabitants for culinary purposes, for which it is regarded as of the very best quality.

These waters unquestionably possess remedial virtues of a high order. Strongly tonic, and mildly aperient and alterative, their analysis sufficiently indicates the number and character of the diseases to which they are adapted, and when they shall have been thoroughly tested, and their use skilfully directed by the hand of science, they will, no doubt, be appreciated as agents of no mean value.

They are the only known waters in the State, and, with a single exception, in the United States, so far as is shown by the result of any analysis within our knowledge, that contain iron in the form of a chloride. There may be others, but a pretty thorough research has failed to discover the record of any such.

The acknowledged superiority of the *chloride* of iron in many affections, where it is indicated, would secure its more general use, but for the disagreeable taste of the drug as it is prepared in the shops, which renders it difficult of administration, especially to children and delicate persons. But in the dilute form in which it exists in these waters, pharmaceutically prepared by nature's own hand, it may be taken as a delicious beverage, and in sufficient quantities, if persisted in, to fulfil most of the indications for which it is usually prescribed. As a tonic, in all the cases in which the other ferruginous compounds are administered, this form of iron is at least equally as valuable as any of them, and from its physiological effect upon the urinary system, we might expect it to be an efficient agent in affections of the kidneys, bladder, urethra and the prostate gland, and experience has demonstrated its great value in passive hæmorrhage from the kidneys, uterus and bladder; and the success that has attended its use in gleet, leucorrhœa and the latter stage of gonorrhœa, is only equalled in anæmia, chlorosis, scrofula and kindred affections.

The immediate sensible effect of this water when taken freely by those unaccustomed to its use, is that of a mild, but pretty brisk purgative, operating freely without the least pain or inconvenience, the result of the magnesia, of which it contains enough to secure a healthy peristaltic action, promote the secretions, &c., without any danger from the debilitating effects to persons of feeble habits, such as might result from the excessive purging that sometimes follows the free use of mineral waters more strongly purgative.

The renowned "Saratoga Springs," situated in that range of country so famous for its salt springs, are all largely impregnated with common salt, to the purgative qualities of which they doubtless owe much of the celebrity they have acquired as remedial agents. The celebrated "Congress Spring," of this group, contains about 430 grains of common salt to the gallon; or nearly a teaspoonful to a pint, rendering it exceedingly brackish and disagreeable to the taste, and a brisk purgative if taken in quantities that would be indicated for use as a tonic.

Some who are unwilling to wait for the results of remedies unless administered in heroic doses, may be skeptical as to the effect of iron in the quantity found in this water. Let such reflect that it is upon the slow and gradual introduction of this agent, which in health always exists in the blood, and pervades every part of the system, that its success in the treatment of chronic diseases de-

pends, and that the dilute form in which it exists in mineral waters is that which is best adapted to be introduced through the medium of "the large mucous surface of the entire digestive canal, to every portion of which it is applied, and by which it is freely absorbed; thus reaching all the tissues of the animal frame," communicating no shock, causing no congestion and resulting in no dangerous re-action.

Some two or three miles easterly from Bryan, three wells were sunk near each other, to the respective depths of *fifty*, *fifty-seven* and *fifty-nine* feet; all of which produced water so bitter that it was entirely unfit for use. And within eighteen feet of one and twenty-five feet of another of these bitter wells, at the depth of *forty-two* feet, a vein was struck, which poured forth an abundance of most delicious water, apparently of the same quality as that of the Bryan wells.

And not far distant, after boring about thirty feet, a strong current of carburetted hydrogen was thrown up, which coming in contact with a lighted taper, exploded, to the great alarm and some injury of the operator. Carburetted hydrogen in considerable quantities has also manifested itself in several other localities in that region, which gives rise to interesting inquiries among the people as to its source, whether attributable to decomposition and recomposition, the result of chemical action occurring in the earth, independent of heat, and proceeding from underlaying beds of coal, or other forms of carbonaceous matter; or from some other source.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

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DR. BELL'S EXPERIMENTS WITH THE INDIAN HEMP.

We would call the attention of our readers, especially those interested in psychological science, to a curious and interesting paper on the Cannabis Indica, commenced in this number, and to be continued in our next. The writer, whose pen is new to our pages, although the name is among the household words of anatomy and surgery, and is, with different initials, well known in connection with the subject of insanity, seems to have engaged in a series of self-experimentations with the determination to ascertain why a drug represented to induce such remarkable effects on the psychical condition in Oriental countries, should have been dropped, after some trial in our hospitals for the insane, as inert and useless. It would seem, unless his experiences are in some degree peculiar to his own constitution (and certainly it is desirable that they should be repeated on others equally capable of noting and recording the results), that an insufficiency of dose explains the hitherto observed powerlessness of the drug with us.

Dr. Bell's views as to the analogies between an actually insane

state and the condition induced by the Haschisch are quite interesting, as are also his suggestions as to our having a means in watching the effects of the drug upon the sound constitution, by which to reach and appreciate the disturbances of the nervous system in insanity. We regard the paper as one of great ingenuity and originality.

MASSACHUSETTS STATE LUNATIC HOSPITAL.

We are glad to see that the improvement in the mode of treating the violent insane, commenced in some of our hospitals a year or two ago, is still continued with most encouraging results. Two years since, we called attention to the condition of the Worcester Hospital, which had just been relieved from the pressure of more than twice as many patients as could be properly treated, by the transfer of two hundred and ten inmates to the Taunton Hospital, which was then first opened. At that time there were in the Worcester Asylum forty-eight "strong rooms," built of stone or brick, with gratings, and apertures for putting in food, taking out vessels, &c., which were used for the purpose of confining the furious, violent and indecent patients. This state of things was necessary in consequence of the overcrowding of the establishment, rendering a resort to the old method of force necessary, in certain cases, in lieu of more gentle treatment.

In consequence of the relief obtained by the reduction in the number of inmates, the Trustees were enabled to dispense with twenty-four "strong-rooms." Since July last, up to the time of the Annual Report (in December), Dr. Bemis, the Superintendent, had not, in a single instance, made use of these cells for the confinement of patients, nor has he as yet found it necessary to employ any extra attendants in the various wards. With regard to the violent patients, it is often necessary to confine them for short periods; but they are always placed in their sleeping rooms, and it is found that the effect is most favorable, the paroxysms passing off more readily than by confinement in the cells.

Another improvement which has been effected in the Worcester Hospital, is the adoption of a new method of warming and ventilating the building. The old plan had long been condemned as both defective and dangerous, but the expense of constructing new works in order to remedy these defects was so great, that the Trustees recommended to the Legislature to sell the present land and buildings, and to erect a new hospital upon a more improved plan. It was calculated that the expenses necessary to make the required alterations in the hospital, would amount to between sixty and seventy thousand dollars. The main difficulties to be encountered were the want of height in the wards, and the small diameter of the hot-air flues and ducts for discharging foul air. These obstacles, however, have all been overcome by a system of ventilation and heating adopted from the Utica Hospital. This consists in forcing air, by means of a fan driven by a steam-engine, through a chamber filled with steam-pipes, by which the necessary temperature is imparted to it, into the flues connected with all the apartments in the building. A constant change of air is thus secured, which may be increased or retarded at pleasure, by increasing or slackening the speed of the fan. The new plan has been found to work admirably, the air of the hospital being perfectly pure, and

of an agreeable temperature, while the expense of the alterations has been found to be under twenty-nine thousand dollars.

AMERICAN MEDICAL ASSOCIATION.

It has been a matter of common remark that the first Tuesday in May, the time fixed for the annual meetings of the American Medical Association, is too early for meetings in the northern cities. The subject was feelingly agitated by many of the delegates who attended the meeting last year in Detroit. Travelling in stove-heated cars, before the least appearance of vegetation, and while huge snow banks were in view along the route, was rather a dreary task. Our northern cities, moreover, at that season have a cheerless aspect, as compared with that presented the first week in June. Our southern brethren, especially, would certainly find it more pleasant to visit us at this later period. There seems to be no reasonable objection to leaving the time of meeting to be determined with the place of meeting each year. As the meetings are announced in all the medical journals of the country, no misunderstanding or confusion could result from such a change.

The annual convention of the Connecticut Medical Society, held soon after the meeting in Detroit, unanimously adopted the following resolution:

"*Resolved*, That this Convention respectfully recommend to the American Medical Association to change the regulation for the time of holding the annual meetings of the Association, so that meetings in the northern cities may be held at a later season of the year."

It is hoped that this recommendation will be favorably received by the meeting this year in Nashville, and that measures will be adopted to effect the proposed change.

ROUTES OF TRAVEL FOR DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION.

Drs. John H. Callender, Robert Martin and P. S. Woodward, a committee appointed by the physicians of Nashville, Tenn., publish in the *Medical Journal* of that place the routes for delegates to the next meeting of the Association there. The following are the different routes pointed out by them from the North.

"Delegates from *New England and Northern States* can reach this city by vessel from New York, Boston, or Philadelphia to Charleston, S. C., and thence by railroad, via Augusta, Ga., Atlanta, Ga., and Chattanooga, Tenn.; or from different points in that section, by railroad to Washington City, and thence via Richmond, Va., Weldon, N. C., Wilmington, N. C., Branchville, S. C., Augusta, Ga., Atlanta, Ga., and Chattanooga, Tenn. The western routes from that quarter are by steamboat from Pittsburgh, or by railroads westward through New York, Pennsylvania, Ohio and Indiana, to Louisville on the Ohio river, and thence by United States mail line of large and splendid stage coaches (via Mammoth Cave, Ky.), through in 36 hours to this city; or from Louisville down the Ohio river to Smithland, Ky., and thence by steamboat packet line to this city."

NEW YORK ACADEMY OF MEDICINE—THE LATE DR. KANE.

At a meeting of the Academy on Wednesday, the 8th inst., Dr. J. W. Francis, Chairman of a Committee previously appointed for the

purpose, offered appropriate resolutions respecting the death of Dr. Kane, accompanied with a brief but eloquent eulogy on his life and character. In speaking of his physical conformation and power of endurance, Dr. F. says—"I betray in no wise the confidence of friendship, when I state, what I derived from his own lips just before his last departure from New York, that his greatest weight had been 97 pounds, and that during a portion of his Arctic career it did not exceed 93 pounds."

The subject of the contagiousness of puerperal fever was afterwards discussed by the Society.

Homœopathy; its Testimony against Itself.—This pamphlet, re-published from our pages, is a capital *exposé* of the actual weakness of the form of quackery about which there is such loud trumpeting in this country, just at present. We propose to notice it soon, and indicate certain portions which strike us particularly.

It is admirably suited as an answer to the frequent questions addressed to the physician, by his patients and others, as to the success and inherent value of homœopathy, and we recommend practitioners to put a few copies in their pockets to be used in this way. They will thus be saved a vast deal of time, now wasted in the endeavor to enlighten inquirers after truth in these respects. As to arguing the matter with those inclined to credit the pretensions of irregular practitioners of this class, it is simply absurd; when, however, they can be condemned out of their own mouths, the testimony is at once convenient and effective.

Mass. Medical Benevolent Society.—The members of this Society met, by invitation, at the house of Dr. Parks, on Wednesday evening last. There was a numerous attendance, and much interest was manifested in the new enterprise. The funds of the Society were also materially increased. The members separated after having passed a most agreeable evening.

Dr. Brown-Séquard.—We are gratified in being able to announce that the *Académie des Sciences* of Paris, at their last annual meeting, conferred upon this gentleman a prize of the value of $200, for his researches on Epilepsy, now publishing in this Journal.

Dr. Benjamin Cutter, of Woburn, received the honorary title of M.D. at the late medical commencement of the University of Penn.

Health of the City.—Scarlatina still lingers among us, having caused 13 deaths during the last week. The ages of the subjects were under 5 in six cases, between 5 and 10 in six cases, and 18 in one instance. The total mortality for the week is small. For the corresponding week of last year, the number of deaths was 68, of which 10 were from consumption, 3 from scarlatina, and 5 from lung fever.

Deaths in Boston for the week ending Saturday noon, April 11th, 65. Males, 30—Females, 35—Accident, 3—apoplexy, 2—congestion of the brain, 2—consumption, 14—convulsions, 1—croup, 2—infantile diseases, 5—puerperal, 2—scarlet fever, 13—disease of the hip, 1—disease of the heart, 3—intemperance, 2—inflammation of the lungs, 4—marasmus, 2—pleurisy, 1—disease of the spine, 1—scrofula, 1—teething, 1—unknown, 3—whooping cough, 2.

Under 5 years, 25—between 5 and 20 years, 13—between 20 and 40 years, 16—between 40 and 60 years, 7—above 60 years, 4. Born in the United States, 49—Ireland, 11—other places, 5.

Mortality of Charleston, S. C.—In preparing the statement on this subject, in the Journal of April 2d, from Dr. Dawson's Annual Report, one part of his tables showing the causes of death was inadvertently overlooked. The last two lines in that statement should read as follows:—The deaths by yellow fever were—whites, 203; blacks and colored, 9. By consumption—whites, 70; blacks and colored, 85. Of old age—whites, 25; blacks and colored, 86.

Medical College of Virginia.—The annual commencement of this College was held in Richmond, at the close of the winter course of lectures. A large and brilliant audience attended the exercises, and the honors of the doctorate, as we learn from the *Virginia Medical Journal*, were conferred on the graduating class, which numbered twenty-three. Prof. Jones delivered the valedictory address.

St. Louis Medical College.—The exercises at the annual commencement of this institution were held on the 28th of February. In the presence of a large and intelligent audience the degree of Doctor of Medicine was conferred on forty-four young gentlemen composing the graduating class. The *ad eundem* degree was also conferred on seven medical gentlemen, and the honorary degree on Dr. Henry C. Wright, of Warren County, Mo. Prof. J. H. Walters delivered the charge to the graduates. At the close of the exercises, the members of the class presented to the Faculty a faithfully-executed portrait likeness of their Dean, Prof. Charles A. Pope.

Missouri Medical College.—The annual commencement of this College also took place on the 28th of February in St. Louis. The degree of M.D. was conferred on thirty-one graduates; the *ad eundem* degree on one, and the honorary degree on four medical gentlemen. Prof. Frazer delivered the valedictory address to the graduates, before a very large audience, as we learn from the *St. Louis Medical and Surgical Journal.*

Medical College of Georgia.—The number of students in attendance upon the late course of lecture in this College, located at Augusta, as we learn from the *Southern Medical and Surgical Journal* of that city, was 160—of whom 105 belonged to Georgia, 20 were from South Carolina, 27 from Alabama, 3 from Mississippi, 3 from Texas, and 1 each from Tennessee and Florida. The Faculty of the College have recommended to the Trustees 55 of these students as qualified to receive the degree of M.D. John Venable, M.D., of Jackson Co., Geo., was admitted *ad eundem gradus.*

The Poisoning Cases at Washington.—The following is an extract from a letter to a physician in New York, from Dr. Thomas Miller, for many years President of the Board of Health of Washington, D. C.:

"I have never known our city more healthy than at present. The disease which made its appearance at the National Hotel was from a local cause, and never extended beyond the hotel. One or two or a few of our citizens were affected from eating at or visiting the hotel, but the disease attacked none others. It was confined to persons who stopped at the hotel, and *never spread beyond its walls.* The Board of Health, after full investigation, are satisfied that the disease arose from local causes, filth, bad sewerage, &c. There never has been a case, which came under our notice, that justified the suspicion that any poison (mineral) had caused it. *No fatal case has occurred here.*"

Operations for Hare-lip.—In a notice of a recent operation for hare-lip by Dr. Dow, of Fredericton, N. B., published in the *Reporter* of that place, it is stated that he has performed the operation forty-two times previously in New Brunswick, and that this is his 89th operation for this deformity. "Seventeen of the whole number of patients operated on were between 2 and 8 months old, 29 between 8 and 12 years, 16 between 13 and 20 years, 11 between 23 and 32 years, 7 between 35 and 40 years, 2 at 43 years, and 7 at 48 years old. Chloroform has been administered in every case but four—in these four cases chloric and sulphuric ether were used."

Dr. William Darling, formerly of New York city, has been admitted a member of the Royal College of Surgeons, in London.